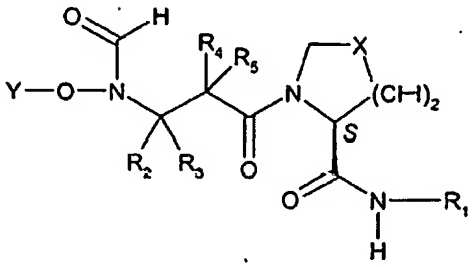
Amendments to the Claims

CLAIMS

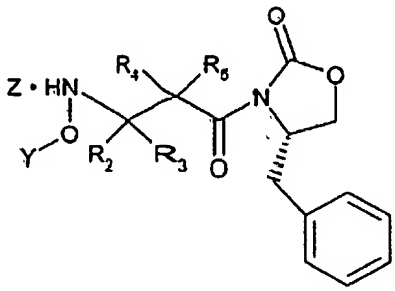
1. A process for preparing a compound of the formula (VII)



(VII)

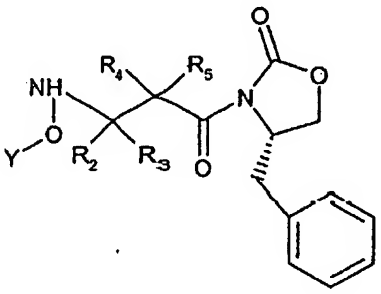
comprising Step 1A:

contacting a compound of the formula (I)



(I)

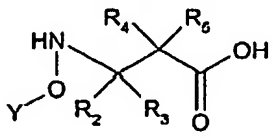
with a base in a suitable solvent to form the free base of compound (I), i.e., compound (II) of the formula (II)



(II)

followed by Step 1B:

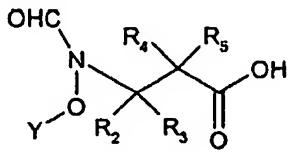
contacting compound (II) with a strong nucleophile/weak base in a suitable solvent under conditions to form compound (III) of the formula (III)



(III)

followed by Step 2A:

contacting compound (III) with a formulating agent in a suitable solvent under conditions suitable to form a compound of formula (IV)

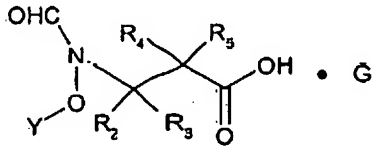


(IV)

,

followed by Step 2B:

contacting compound (IV) with an amine or an alkaline metal hydroxide in a suitable solvent under conditions to form a compound of formula (V)

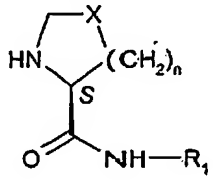


(V)

,

followed by Step 3:

contacting compound (V) with a compound of formula (VI)



(VI)

,

in the presence of a suitable base and one or more coupling agents in a suitable solvent under conditions to form a compound of formula (VII)

wherein

Y is a hydroxy protecting group;

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or (R_4 and R_5) collectively form a C_{4-7}cycloalkyl;

G is $-O^{\ominus}metal^{\oplus}$ or –OH•amine;

X is $-CH_2-$, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, $-CF_2-$, -C=N(OR)- or -CH(F)-;

R is alkyl;

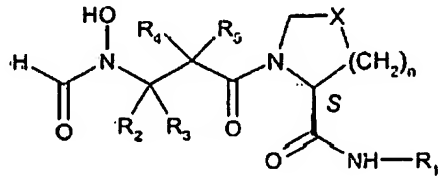
R_1 is aryl or heteroaryl;

Z is a strong organic or inorganic acid; and

n is 0-3, provided that when n is 0, X is $-CH_2-$.

2. The process of Claim 1 followed by Step 4, contacting the compound of formula VII, wherein R_1 is heteroaryl having an N heteroatom, with an oxidizing agent to form the corresponding N-oxide derivative.

3. The process of Claim 2 followed by the additional step of removing the hydroxyl protecting group of compound VII to form the compound of formula VIII:



(VIII)

wherein R_1, R_2, R_3, R_4,R_5, X and n are as defined above.

4. The process of Claim 1,

wherein

each of R_2, R_3 and R_5 is hydrogen;

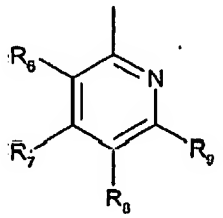
R_4 is butyl;

X is $-CH_2-$;

n is 1;

Y is benzyl or *t*-butyldimethylsilyl; and

R_1 is of the formula



wherein

R_6 and R_9 are hydrogen;

R_7 is hydrogen or C_{1-7}alkyl; and

R_8 is hydrogen, halogen or C_{1-7}alkyl.

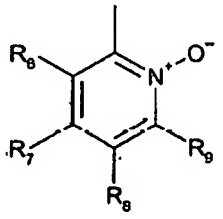
5. The process of Claim 4,

wherein

R_7 is hydrogen; and

R_8 is fluoro.

6. The process of claim 1, wherein R_1 is of the formula (XIa)



(XIa)

each of R_2, R_3 and R_5 is hydrogen;

R_4 is butyl;

X is $-CH_2-$;

n is 1;

Y is benzyl or t-butyldimethylsilyl;

R_6 and R_9 are hydrogen;

R_7 is hydrogen or C_{1-7}alkyl; and

R_8 is hydrogen, halogen or C_{1-7}alkyl.

7. The process of Claim 6 wherein R_8 is halo or ethyl.

8. The process of Claim 6 wherein R_7 is hydrogen and R_8 is fluoro.

9. The process of Claim 1 wherein

for Step 1A the temperature is about 10° C to about 40° C, the water soluble base is sodium carbonate, sodium bicarbonate, potassium carbonate, potassium bicarbonate, or an alkaline metal hydroxide, and the solvent is water/ethyl acetate,

for Step 1B the temperature is about -10° C to about 10° C, the strong nucleophile/weak base is lithium hydroperoxide, and the solvent is THF/water,

for Step 2A the temperature is about -20° C to about 20° C, the formyalting agent is formic acetic anhydride, and the solvent is ethyl acetate,

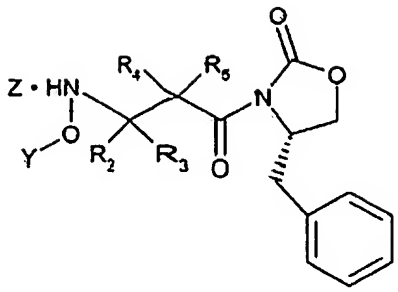
for Step 2B the temperature is about -5° c to about 40° C, the solvent is heptane and the G substituent is of the formula -OH•amine wherein the amine is dicyclohexylamine,

for Step 3 the temperature is about 10° C to about 40° C th solvent is water/ethyl acetate, and the coupling agent is EDCI/HOBt, and

for Step 4 the temperature is about 10° C to about 35° C, the solvent is ethyl acetate and the oxidizing agent is urea/hydrogen peroxide with phthalic anhydride or magnesium monoperoxyphthalate.

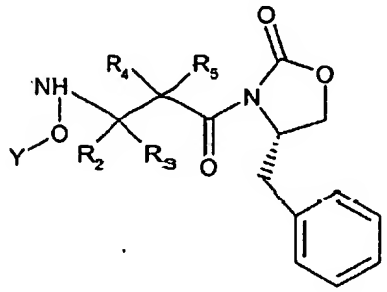
10. A process comprising

contacting a compound of the formula:(I)



(I)

with a base in a suitable solvent to form compound (II) of formula



(II)

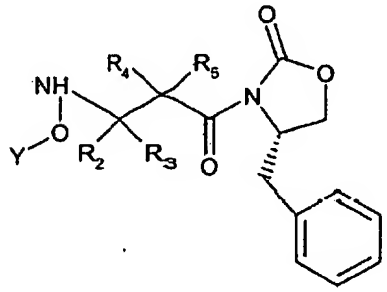
wherein

Y is a hydroxy protecting group;

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or (R_4 and R_5) collectively form a C_{4-7}cycloalkyl;

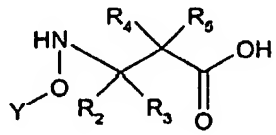
and Z is a strong organic or inorganic acid.

11. A process comprising contacting compound (II) of the formula



(II)

with a strong nucleophile/weak base in a suitable solvent under conditions to form compound (III) of the formula



(III)

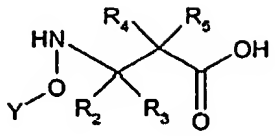
wherein

Y is a hydroxyprotecting group; and

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or (R_4 and R_5) collectively form a C_{4-7}cycloalkyl.

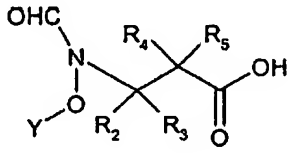
12. A process comprising

contacting compound (III) of the formula



(III)

with a formulating agent in a suitable solvent under conditions suitable to form a compound of formula (IV)



(IV)

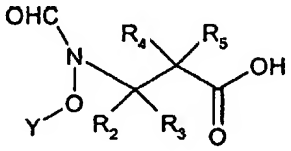
wherein

Y is a hydroxy protecting group; and

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or R_4 and R_5) collectively form a C_{4-7}cycloalkyl.

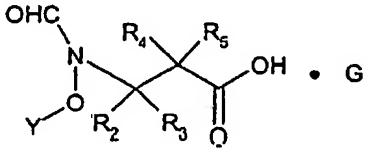
13. A process comprising

contacting compound (IV) of the formula



(IV)

with an amine or an alkaline metal hydroxide in a suitable solvent under conditions to form a compound of formula (V)



(V)

wherein

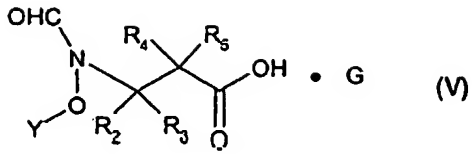
Y is a hydroxy protecting group;

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or (R_4 and R_5) collectively form a C_{4-7}cycloalkyl; and

G is $-O^{\ominus}metal^{\oplus}$ or –OH•amine.

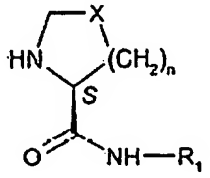
14. A process comprising

contacting compound (V) of the formula



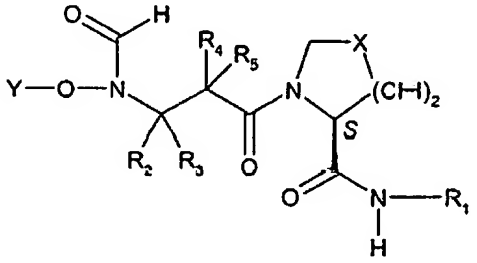
(V)

with a compound of formula (VI)



(VI)

in the presence of a suitable base and one or more coupling agents fin a suitable solvent under conditions to form a compound of formula (VII)



(VII)

wherein

Y is a hydroxy protecting group;

each of R_2, R_3, R_4 and R_5 is, independently, hydrogen or alkyl, or (R_2 and R_3) and/or (R_4 and R_5) collectively form a C_{4-7}cycloalkyl;

G is $-O^{\ominus}metal^{\oplus}$ or -OH•amine;

X is $-CH_2-$, -S-, -CH(OH)-, -CH(OR)-, -CH(SH)-, -CH(SR)-, $-CF_2-$, -C=N(OR)- or- CH(F)-;

R is alkyl;

R_1 is aryl or heteroaryl; and

n is 0-3, provided that when n is 0, X is $-CH_2-$.